Internship Business case

Volvo Group

August 2022

Welcome to the Volvo world!

This is an organization initiative to train fresh graduates interested in pursuing a career in the field of data. The training will happen across 2 to 3 months with exposure to various aspects of Data. It would need a commitment of approximately of 25 to 30 hours per week. The selected candidates will be assisted by mentors who will take them through key concepts along with some real life use cases from the Volvo group. There will also be evaluations that will assess the knowledge and skills gained by the candidates.

At the end of the training/internship, the candidates would gain a real world understanding of the field of data and how it is applied in the automotive domain. Based on the performance of the candidates, they could be eligible to work directly on real time projects.

As a part of the selection process, the candidates are expected to send us this completed deck in the expected time frame.

We wish you all the very best!

Business Task

VOLVO

Business Context

- In our business it is of upmost importance that we fulfil our commitments towards customers.
- One of our business areas (Volvo Construction Equipment) manufactures various machines, such as excavators, loaders, rollers and so forth. It is extremely important to deliver them to our customers exactly when they need them. Late delivery could mean delays in construction work carried out by our customers and early delivery may drive up storage cost. Machines are sold through dealers. 2 applications are used in the process:
- FERP system used in factories which receives information from dealers about orders for specific machines and to enter information about shipped machines.
- Sales system in which dealers place orders and confirm delivery of machines

Expected result

- Use any database and data visualization tool that you want.
- Present database structure in a graphical model to show columns and relations between them.
- Present and describe reports in a picture, PDF

The Task

- Prepare a database structure (tables, relations) to store information relevant to this business process:
  - Master data: factories, machines, customers
  - Database structure in factory: Order number, order date, machine number, date of shipment
  - Database structure in sales system: Order number, order date, machine number, quantity, requested delivery date
- Populate databases with sample data (10-20 transactions, make sure there are orders with multiple positions in them – more than one machine per order with different requested delivery dates)
- Build a visualization which shows the following metrics:
  - Average delivery time (days) for all orders, all machines.
  - Average delivery time per machine type.
  - Top 3 orders with regards to deviation between requested and actual delivery time .
  - Delivery precision – percentage of order lines (positions in orders) delivered on time versus all order lines. Delivery is considered on time when requested delivery date equals actual delivery date.

Useful links

Volvo Construction Equipment - https://www.volvoce.com/global/en/
Volvo Construction Equipment – product range: https://www.volvoce.com/europe/en/products/

Few things to note

- Please make your solution as unique as possible. The solution will be reviewed with you in case you are shortlisted for the internship/training
- The business case is a situation and may not have the answer to all your queries. Please feel free to make your assumptions but do mention them in your solution
- It goes without saying that there is no right or wrong answer here. We are interested in the approach you will take in finding a solution to this challenge and hence we request you to keep the ‘materials’ that were used while arriving at the solution. For us, the ‘Journey’ is more important than the ‘Destination’ ☺

One Pager – About me

Introduce yourself and share with us whatever you want in context of the internship:

I thank you for giving me this opportunity. My name is Abishek Bhat R. I have completed post graduate degree from Imarticus Learning as an data analysts, now pursuing a bachelor's degree in Electronics and Communication Engineering at K. Ramakrishnan College of Technology. I obtained my 12th grade at Sri Vageesha Vidhyashram and my 10th grade at Mahatma Gandhi Centenary Vidhyalaya. I've been interested in cooking with my father because I think that having fun while learning should be a priority. My favorite pastimes include listening to religious music and visiting temples, which helps me concentrate on my work. Since Volvo is one the most advanced and most prestigious company around the globe, I'm excited and eager to begin my internship with Volvo. As a data analyst student, I am really eager to learn about the practical applications of data in the business world of the automotive sector of volvo.

- **Why did you choose Volvo Group Digital & IT?**

Volvo is a reputable organization that supports students' academic and career development. To be an intern at Volvo will be a fantastic way for me to launch my career.

- **How will you contribute as an intern?**

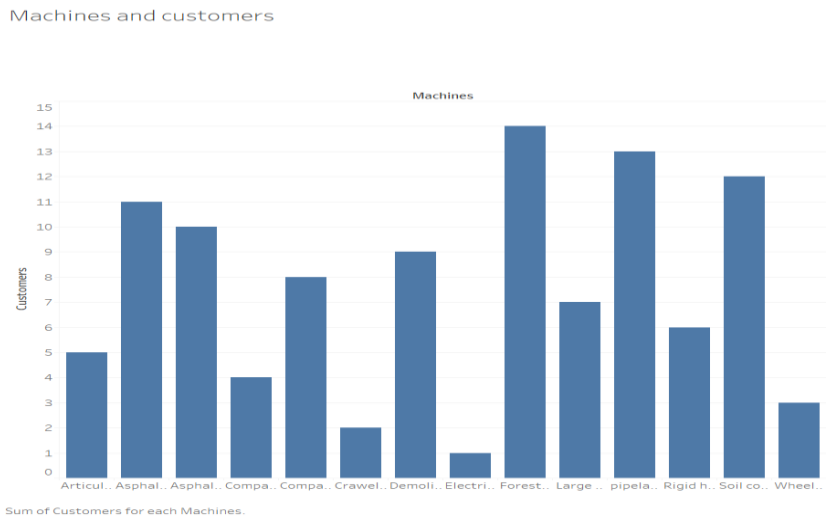
I am constantly interested in learning as a student and intern, and I firmly believe that I can contribute new perspectives and creativity to the organization.

- **How the internship will support your development?**

Through this internship, I will obtain useful privileged information that will enhance my career. Additionally, this intern will provide me a glimpse into my future professional life.

Your Solution

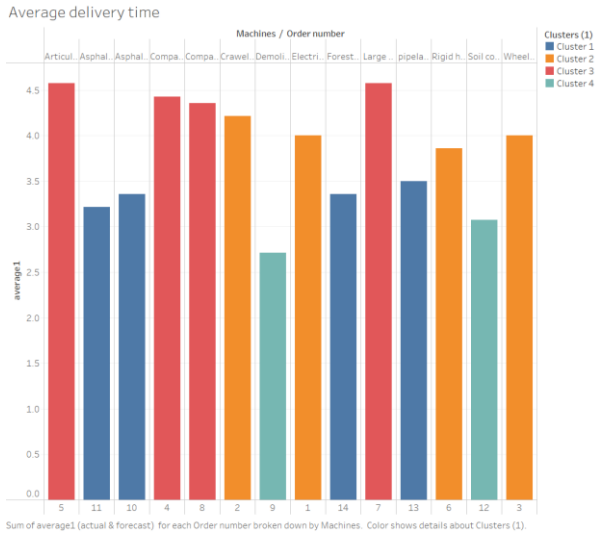
With the aid of the aforementioned source and information found online, I have selected the data. several columns, including Order number, Order date, and Shipment Date Based on my assumptions, the order's date, order number, quantity, and specified delivery date have been picked. Using MYSQL, I established the database and filled in the information for the aforementioned field name using a few simple term like inserts. I've also used Python. I linked the MYSQL local server to Python, and then I connected the other two fields' primary keys, to create a data frame. The merged data frame is converted into excel sheet which is then used in tableau tool for data visualization.



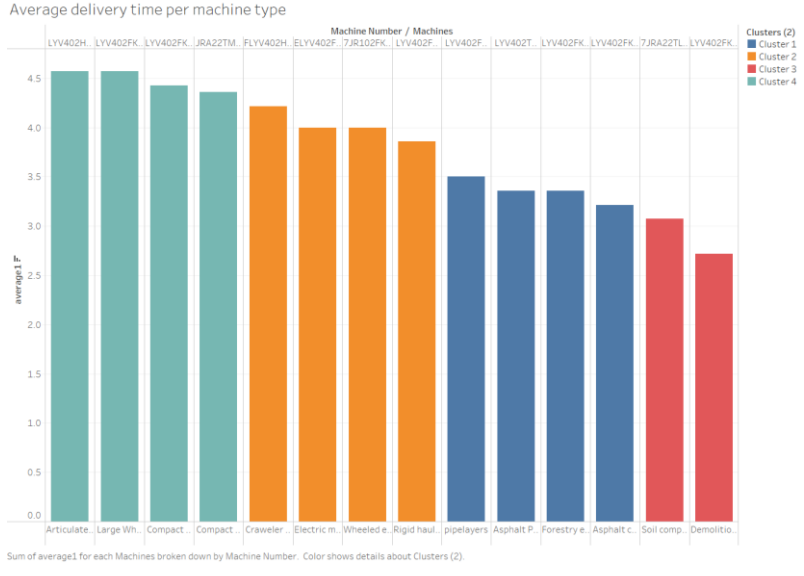
Here is a place for you to share something about your experience connected to the selected area. Maybe you have some related projects, achievements or academic tasks done?

I am very much glad to be an data analyst where I understood the backdrop of sales and other important business aspects. I had an opportunity to complete nearly 20 projects during my course. Customer Segmentation using unsupervised learning is my key project where I have segregated customer of a company into various category with the help of their age and expenditure. Another few projects are mobile price prediction, Black Friday, Auto mobile prediction, IMDB analysis, Breast cancer deduction and another customer segmentation using unsupervised learning with different set of data. I got an opportunity to my project to my juniors of my department where I gave a brief idea about machine learning concepts.

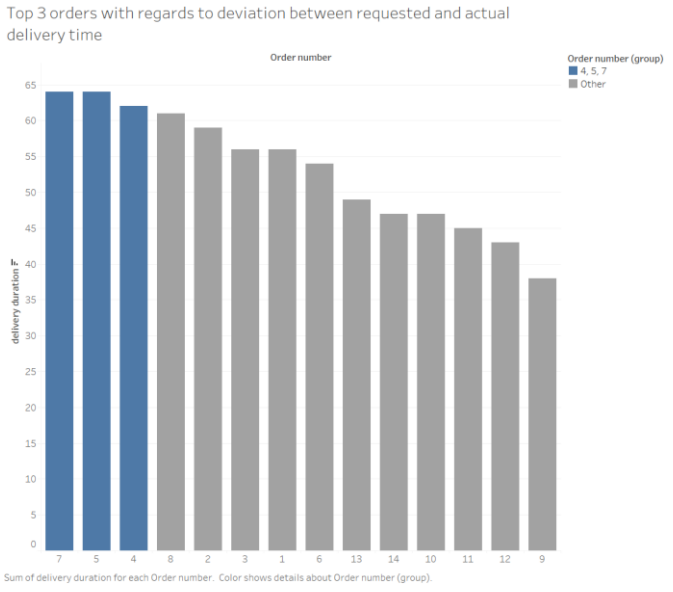
This graph helps us to understand about the average duration in days for all order and all machine. I have chosen two different where one is the average time taken to deliver the given order with respect to the machine.



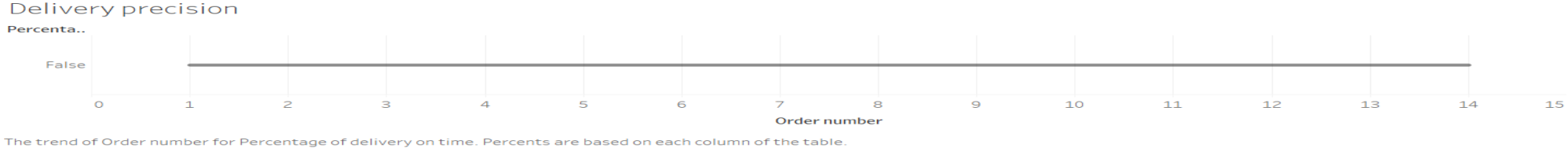
This graph helps us to understand about the Average delivery time per machine type. I have chosen different aspects like machine number and it’s respective machine in accordance to the average days for the delivery.



This graph helps us to understand about the top 3 orders with regards to deviation between requested and actual delivery time. The top 3 deviation that has maximum duration has been highlighted.

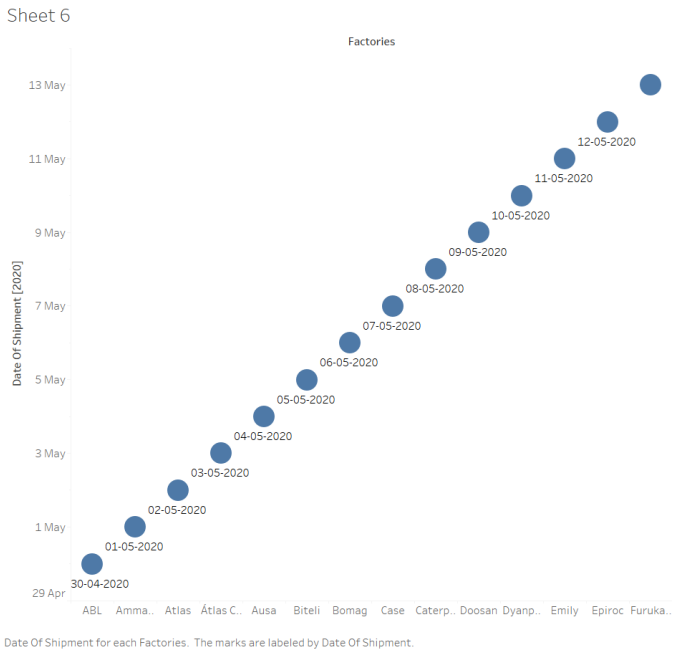


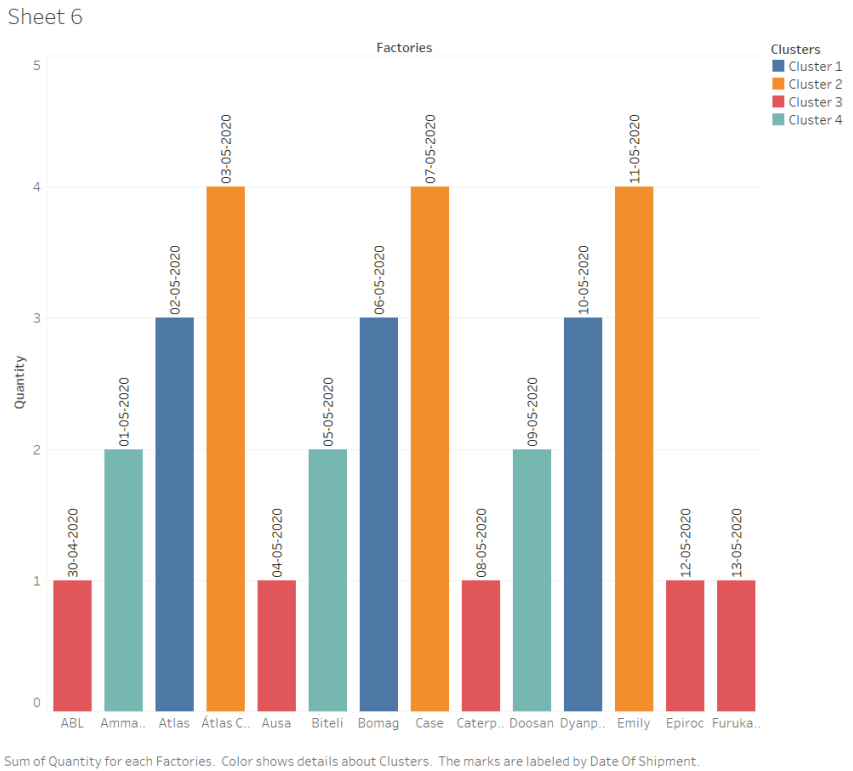
The below graph helps to understand about the Delivery precision. All the orders are delivered before the delivery time. So in the below graph it mentioned as false for all the order.

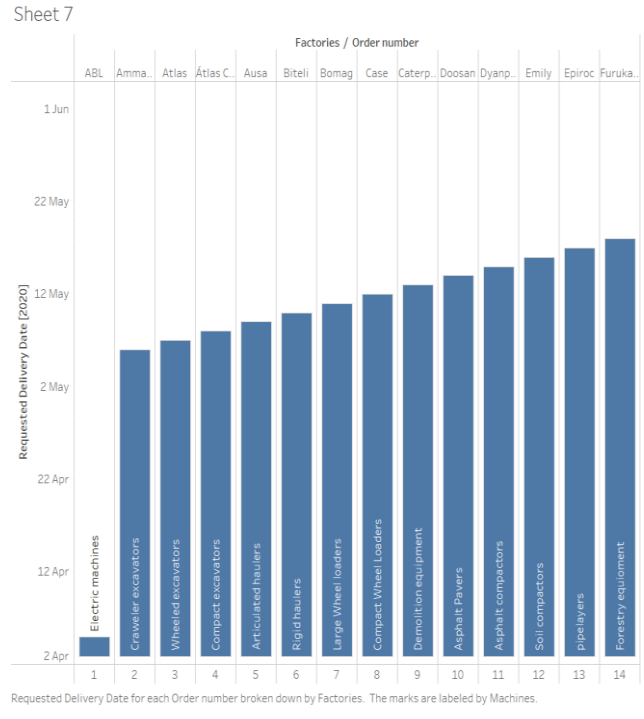


VOLVO

Other few graphs that could help us to understand about the nature of the data.







Thank you!